

CLAIMS

1. A method of determining the damping factor of a shock absorber which includes

5 attaching an accelerometer to one of a first and a second part of the shock absorber;

displacing the first- and second parts of the shock absorber relative to one another at least once;

0 measuring the acceleration of the parts of the shock absorber relative to each other by reading a signal from the accelerometer; and

determining the damping factor of the shock absorber by analysis of the measured acceleration.

2. A method as claimed in claim 1, which includes attaching the accelerometer

5 to a vehicle body proximate one of the wheels of the vehicle body and which is fast with one of the first part and the second part of the shock absorber.

3. A method as claimed in claim 1 or claim 2, in which the signal from the

0 accelerometer is read over a period of time at discrete intervals, to generate a series of measured acceleration values.

4. A method as claimed in claim 3, in which determining the damping factor of the shock absorber includes modeling the movement properties of the shock absorber mathematically with a differential equation to generate a series of theoretical

acceleration values and mathematically fitting the series of theoretical acceleration values to the series of measured acceleration values.

5. A method as claimed in claim 4, in which the differential equation is of the

5 second order.

6. A method as claimed in claim 4 or claim 5, in which the mathematical fitting of the series of theoretical acceleration values to the series of measured acceleration values is performed iteratively.

10

7. A method as claimed in claim 6, in which the iterative fitting of the series of theoretical acceleration values to the series of measured acceleration values is repeated until a predefined correlation between the series of theoretical- and measured acceleration values is obtained.

15

8. A method as claimed in claim 7, in which the mathematical fitting of the series of theoretical acceleration values to the series of measured acceleration values employs a "Nelder Mead" algorithm.

20

9. A method as claimed in claim 8, in which a damping constant from the fitted series of theoretical acceleration values is generated from the mathematical model, thereby to approximate the damping factor of the shock absorber with the damping constant generated from the mathematical model and which includes comparing the approximated damping factor of the shock absorber with qualitative data from a  
25 manufacturer of the shock absorber.

10. A method as claimed in claim 9, which includes generating an alarm when the approximated damping factor falls outside tolerable limits of the qualitative data.

11. A method as claimed in claim 9 or claim 10, which includes repeating the 5 method a plurality of times, storing the damping factors thereby obtained, and calculating the average of the stored damping factors.

12. A shock absorber monitoring system, which includes  
an accelerometer for generating an acceleration signal, the accelerometer being  
10 removably attachable to one of a first part and a second part of a shock absorber;  
a processor connected to the accelerometer, the processor being operable to read  
the acceleration signal from the accelerometer and to calculate a damping factor of the  
shock absorber when the first- and second parts of the shock absorber are displaced  
relative to one another; and  
15 an indicator responsive to the processor, operable to display a value  
representative of the damping factor of the shock absorber.

13. A shock absorber monitoring system as claimed in claim 12, which includes a storage device in which a set of instructions are stored, which instructions, when 20 executed by the processor, direct the processor to perform a set of mathematical calculations.

14. A shock absorber monitoring system as claimed in claim 12 or claim 13, in which the accelerometer is remote from the processor.

15. A shock absorber monitoring system as claimed in claim 14, in which the accelerometer includes a radio frequency transmitter and the processor includes a radio frequency receiver responsive to the transmitter, operable to receive the acceleration signal by means of a radio frequency signal.

5

16. A shock absorber monitoring system as claimed in any one of claims 12 to 15, which includes a communication port connected to the processor, operable to send and receive data to and from a remote device, such as a personal computer.

10 17. A method as claimed in claim 1, substantially as described and as illustrated herein.

18. A shock absorber monitoring system as claimed in claim 12, substantially as described and as illustrated herein.

15